Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

NOTES ON SOME ARCTIC FISHES, WITH A DESCRIPTION OF A NEW ONCOCOTTUS.

BY HENRY W. FOWLER.

Dr. Milton J. Greenman, of the Wistar Institute of Anatomy, in Philadelphia, has submitted a small collection of Arctic fishes for my examination. The specimens were all obtained in northern Alaska by Mr. E. A. MacIlhenny while at Point Barrow.

SALMONIDÆ.

Coregonus kennicotti Jordan and Gilbert.

Milner, in Jordan and Gilbert, Bull. U. S. Nat. Mus., No. 16, 1882, p. 298. Fort Good Hope, British America, and Yucon River, Alaska. (J. Kennicott. Types Nos. 8,971 and 9,600, U. S. N. M.)——Fowler, Science, XXI, 1905, p. 315.

Coregonus nelsonii Fowler, Proc. Amer. Philos. Soc. Phila., XLIII, 1904, p. 451, Pls. 8 and 9. Meade River and Point Barrow, Alaska. (Not of Bean.)

Four large examples from Meade river and Point Barrow, Alaska. These I had previously recorded wrongly under the name *Coregonus nelsonii,* as now appears from an examination of more material. Dr. Smith has figured *C. kennicotti,*[1] which will be found to agree largely with this account. At Point Barrow Mr. MacIlhenny's notes indicate that *C. kennicotti* is known as 'Anocta.'

Coregonus nelsonii Bean. Fig. 1.[2]

Proc. U. S. Nat. Mus., VII, 1884 (1885), p. 48. Naulato, Alaska. (Mr. E. W. Nelson. Type No. 29,903, U. S. N. M.)

Head 5; depth $3\frac{4}{5}$; D. iv, 10, i; A. iv, 11, i; P. I, 14; V. I, 10; scales 74 in lateral line to base of caudal, and 4 more on latter; 10 scales obliquely back from origin of dorsal to lateral line; 9 scales between origin of ventral and lateral line in a vertical series; 8 scales obliquely forward to lateral line from origin of anal; about 40 scales before dorsal; width of head $1\frac{2}{3}$ in its length; depth of head $1\frac{1}{2}$; snout 4; eye $5\frac{1}{5}$; maxillary $3\frac{1}{3}$; interorbital space $3\frac{1}{6}$; least depth of caudal peduncle $2\frac{2}{5}$; length of base of dorsal $1\frac{5}{7}$; of anal $1\frac{3}{5}$; length of upper caudal lobe (damaged) about 1; pectoral $1\frac{2}{5}$; ventral $1\frac{2}{7}$.

---

[1] *Rep. U. S. Fish Comm.,* XX, 1894 (1896), p. 294, Pl. 15.

[2] The accompanying figure represents a male without the characteristic hump.

Body elongate, well compressed, and greatest depth a little before first third in total length of fish, profiles sloping gradually and evenly back from this point to caudal peduncle. Upper profile before dorsal very convex or gibbous so that back is well elevated in this region. Caudal peduncle compressed, and its least depth about 1⅓ in its length.

Head small, rather broad, compressed, upper profile strongly concave to occiput and lower nearly straight and but little inclined. Snout rather long, convex above, obtuse, rounded, and produced beyond upper jaw. Eye circular, supraorbital infringing a little on its upper anterior margin, and center of pupil only slightly behind first third in length of head. Adipose eyelids well developed. Mouth small, inferior, and transverse. Maxillary broad, reaching a trifle beyond front margin of orbit, and its greatest expansion about half of orbit. Jaws rather obtuse, mandible a little posterior. No teeth. Tongue thick, rounded, obtuse, and hardly free. Nostrils lateral on snout about midway in its length, adjoining, and anterior with an elevated cutaneous rim. Interorbital space broad and a little convex with a distinct median longitudinal ridge. Margin of preopercle entire. A number of mucous tubes on cheek and preopercle. Opercle with rather indistinct striæ. Gill-flap rather narrow.

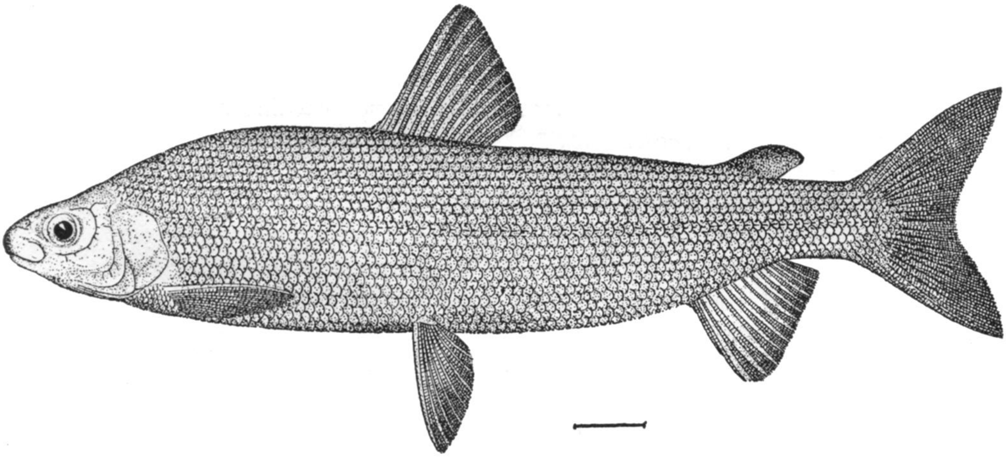

Fig. 1.

Gill-opening extending forward about opposite posterior margin of orbit. Rakers 9 + 13, pointed, rather strong, and longest a trifle less than length of longest filaments. Filaments long, equal to orbit. Pseudobranchiæ about equal to gill-rakers. Isthmus broadly triangular. Branchiostegals 8.

Scales cycloid, mostly of even size, and in parallel longitudinal series. Head and fins scaleless, except base of caudal, where scales are small and crowded. Small scales on base of adipose fin, outer or free portion scaleless. Lateral line median, continuous and nearly straight to base of caudal. Tubes simple.

Dorsal inserted well forward, its origin much nearer tip of snout than base of caudal, first branched rays longest and others graduated down. Adipose dorsal over anal, its origin nearly midway between that of dorsal and tip of upper caudal lobe (damaged), and height of fin about ⅓ in length of its base. Anal similar to dorsal, its origin a little nearer base of caudal than origin of ventral, first branched ray highest and others graduated down. Caudal deeply emarginate, lobes distinct and evidently pointed. Rudimentary caudal rays well developed. Pectoral low, small, lobate, and reaching about half way to ventral. Ventral inserted about opposite base of second dorsal ray, first branched ray longest and when depressed fin reaches half way to anal. Vent close before origin of anal.

Color in alcohol plain brown, back with a rather olivaceous cast and each scale at its junction with one below a little darker than general body color so that many longitudinal bands are formed, most pronounced or distinct on back and upper sides. Fins plain brownish, dorsal and caudal dusky. Iris slaty.

Length 16 inches.

In all, three examples from Point Barrow. The one described above is the only one with a well-developed hump. The hump cannot always be considered a character of the adult male, as the example described is but two inches longer than another example without the hump, which is also a male. This I have figured. Both have the milt little developed. The small male also shows the depth about 4⅕. A female, but little smaller than the male, agrees with the hump-back male in depth, but this is due to the deeper abdomen as the predorsal region is not especially gibbous. The comparisons, etc., of these three examples will now be seen as follows: Head 4¾ to 5¼; depth 3¾ to 4⅕; D. iv, 10, i to iv, 11, i; A. iv, 11, i to iv, 12, i; scales 73 to 79 in lateral line to base of caudal and usually 4 more on latter; rakers 8+13 to 8+15, usually 14 on lower part of first arch; total length of body (caudal damaged) 14 to 16 inches.

This species attains some size. The type, figured by Mr. Nelson, is 18 inches in length. The examples examined by Dr. Scofield, and those before me, are all smaller, and thus the number of gill-rakers in the original account (26) may be due to age. Dr. Scofield's range from 18 to 22,[3] while my specimens show 21 to 23. The scales on the type of *Coregonus nelsonii* are given as 88. This may be verified as a lateral count by consulting Mr. Nelson's figure,[4] though it is evident that the last 3 or 4 are on the base of the caudal.

As suggested by Dr. Boulenger, *Coregonus richardsonii* Günther[5] would appear to agree best with *C. nelsonii*, and in view of our present knowledge, the discrepancies in the lateral line and gill-rakers may now be accounted for. I hesitate, however, to unite these species until Dr. Günther's examples are more carefully studied, aside from the absence of locality.

Argyrosomus pusillus (Bean).

Head 4¾; depth 4⅖; D. iii, 9, i; A. ii, 11, i; scales 84 in lateral line to base of caudal and 3 more on latter; snout 4½ in head; eye 4¼; maxillary 3; interorbital space 3⅞; least depth of caudal peduncle 2½. Gill-rakers 16+28. Length of head from occiput to tip of snout a little less than half of distance from occiput to origin of dorsal. Length 12¾ inches. Meade river. November, 1897.

Only one example which agrees with Dr. Smith's figure,[6] especially in the dark or brownish spots. These are also distinct on the dorsal.

THYMALLIDÆ.

Thymallus signifer (Richardson).

Dr. Horace Jayne kindly forwarded the following of Mr. MacIlhenny's notes concerning this species. These refer to a large example taken in the Meade river, October 9, 1897. "Entire dorsum dark bronze-purplish, gradually fading on sides to lighter bronze toward ventral side and chest to plumbeous-white on abdomen. Two rusty stripes beginning just below bases of pectorals extending to bases of ventrals sharply separate the white area of abdomen from bronze of sides. Tail, anal and pectorals bluish. Ventrals with six or seven nearly perfect longitudinal reddish-brown streaks. An irregular patch of dark spots extends from angle of opercles and pectorals back till about opposite base of ventrals, sometimes nearly absent. Membranes of dorsal bluish, rays light brown. Membranes of dorsal between seventh to twelfth rays spotted with reddish-brown and spots increasing in size, number, brightness and irregularity of outline from front to rear."

---

[3] *Fur Seals N. Pac.* (Fish. Arct. Alask.), III, 1899, p. 494.

[4] *Rep. Nat. Hist. Coll. Alaska*, III, 1887, p. 314, Pl. 20.

[5] *Cat. Fish Brit. Mus.*, VI, 1866, p. 185.

[6] *Rep. U. S. Fish Comm.*, XX, 1894 (1896), p. 312, Pl. 23.

Five examples.

COTTIDÆ.

Oncocottus hexacornis (Richardson).

In all six examples, largest 9 inches long. They all appear to differ in the aggregate of characters from the form which I shall indicate as *Oncocottus hexacornis gilberti*. They are apparently all much broader than in the latter, the preopercular spines are all comparatively shorter, the coloration darker, the cranial osseus excrescences usually not so highly developed, and certain sexual characters are apparently well marked. A small male about 6 inches in length shows the membranes between the dorsal rays deeply scalloped, thus resembling Dr. Scofield's figure.[7] This fin, however, is more spotted or blotched with white. There are also two very distinct white transverse bands on the caudal, though a little further out from the base than his figure shows. In other respects, such as the small cranial protuberances and more pronounced markings on the pectoral, at least five transverse blackish bands. The more distinct color markings seem to be a character of small or young examples. The larger examples are females and agree better with most figures. They have the second dorsal entire. All from Point Barrow, one was found chilled on the beach August 29, 1897.

Oncocottus hexacornis gilberti subsp. nov. Figs. 2[8], 3[9], 4[8] and 5[8].

Head 3; depth $6\frac{2}{3}$; D. VIII–14; A. 15; P. 16; V. I, 3; 29 distinct and well-developed pores in lateral line; width of head a little less than $1\frac{1}{2}$ in its length; depth of head $2\frac{1}{2}$; snout $4\frac{1}{6}$; eye $4\frac{2}{3}$; maxillary $2\frac{1}{5}$; interorbital space 7; width of mouth $2\frac{1}{3}$; length of depressed spinous dorsal $1\frac{2}{3}$; third dorsal spine 3; length of base of second dorsal $1\frac{2}{5}$; fourth dorsal ray $1\frac{1}{2}$; sixth anal ray $2\frac{2}{5}$; length of caudal $1\frac{2}{3}$; least depth of caudal peduncle $9\frac{3}{4}$; length of pectoral, from base of uppermost ray, $1\frac{1}{10}$; length of ventral $1\frac{3}{4}$.

Body depressed, elongate, but more slender when viewed from above than that of *Oncocottus hexacornis*. Greatest depth apparently at middle of belly, and greatest width apparently at lower posterior angle of preopercle. Caudal peduncle slender, its least

---

[7] *Fur Seals N. Pac.* (Fish. Arct. Alask.), III, 1899, p. 501, Pl. 68.

[8] Female.

[9] Male.

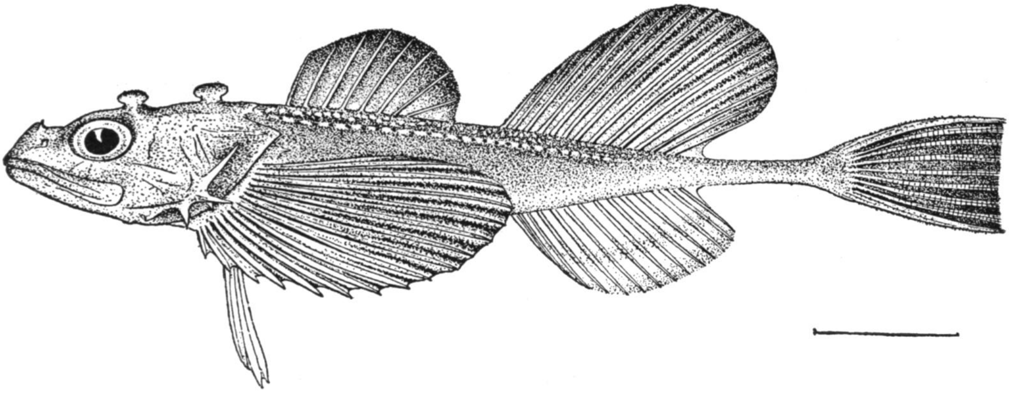

Fig. 2.

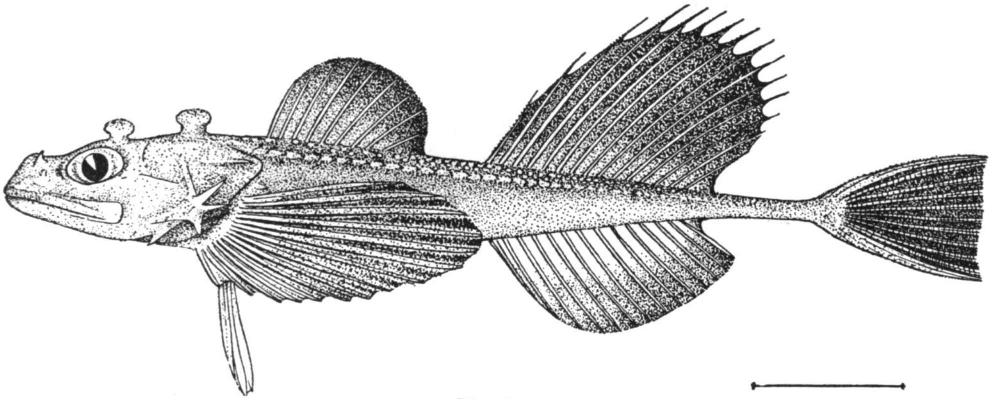

Fig. 3.

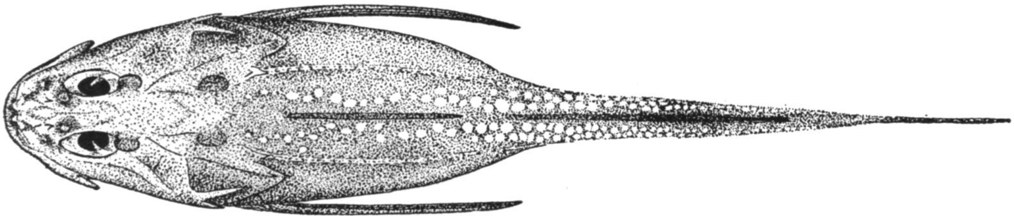

Fig. 4.

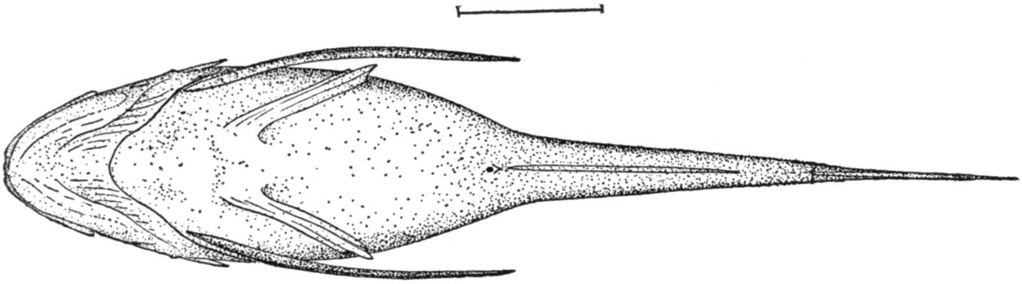

Fig. 5.

width about $\frac{2}{3}$ of least depth and least depth about $4\frac{1}{5}$ in its length.

Head rather deep, more elevated in proportion than that of *O. hexacornis*. It is also decidedly more narrow or angular when seen from above. Snout rather short, blunt, rounded above, or more rounded than in *O. hexacornis*. Upper jaw protruding a little and also produced a little beyond mandible. Eye large, impinging on upper profile, a little longer than deep, and its posterior margin a little before center in length of head. Mouth large, corner or gape extending till about opposite anterior margin of pupil. Lips a little fleshy. Maxillary long, reaching about opposite posterior margin of pupil, and its distal expanded extremity equal to about $\frac{3}{7}$ of horizontal orbital diameter. Teeth rather large, conic, coarse, and in bands in jaws. A patch also on vomer, though none on palatines or on tongue. Tongue broad, thick, triangular and rounded tip free. Buccal flaps rather narrow. Head cavernous, and with rather prominent ridges. Nostrils with rather broad cutaneous rims, anterior on side of snout and in about last third of its length. Posterior nostril large, in interorbital space just before anterior margin of orbit, and its margin large. Interorbital space narrow and concave, $1\frac{1}{2}$ in orbit. Nasal spines 2, well developed, close together and curving a little back. An osseous scabrous postorbital process of large size on each side and another similar one on each side, only larger, in occipital region. Opercular spines 3, upper two close together and both directed back. Lower opercular spine just below second preopercular spine and directed down. Preopercular spines 4, large, uppermost longest or about $\frac{7}{8}$ of horizontal orbital diameter and directed obliquely up and back, also perfectly straight. Third preopercular spine inclined a little down and second vertical. First opercular spine broad and directed forward. Two humeral spines behind upper opercular spine, and 1 axillary spine just above base of uppermost pectoral ray. Mandible cavernous. Ridges on head all more or less rounded. Gill-flap not broad.

Gill-opening rather large, extending forward till about opposite middle of orbit. Rakers rather broad asperous tubercles, 1+6 on first arch. Filaments well developed, about equal to $\frac{3}{5}$ of horizontal orbital diameter. Isthmus broad and flattened. Branchiostegal rays 6.

Body covered with smooth skin. Head with exception of spines and processes covered with smooth skin. On back on each side of median line an irregular double series of scabrous tubercles extending from neck to upper part of caudal basally. Upper edge of pectoral, of second dorsal, both upper and lower edges of caudal and also outer portions of rays of last two fins more or less scabrous. Lateral line distinct till below last dorsal rays, of elevated continuous tubes with pronounced pores at regular intervals and most developed anteriorly.

Origin of spinous dorsal midway between tip of snout and base of sixth dorsal ray, fourth spine longest and others graduated more or less down, edge of fin rounded. Origin of second dorsal about midway between tip of snout and tip of caudal. Fifth dorsal ray longest, several others immediately following subequal and others graduated down with edge of fin rounded. Anal inserted a little in advance of second dorsal, median rays longest, and margin of fin rounded. Caudal truncate, with 6 branched rays, and corners posteriorly a little pointed. Pectoral large, reaching vent, fourth ray longest, and base of first ray about opposite second spine on preopercle. Ventral rather long, second ray longest, and reaching $\frac{3}{5}$ of distance to vent. Vent large, close in front of anal.

Color in alcohol mostly more or less uniform brown above, lower surface paler. Head a little paler brown than trunk. Flanks or upper side of back tinged with dusky. Fins all brownish and ventrals paler or like belly. Dorsals paler basally, outer portions of membranes dusky. Caudal similar. Anal pale brownish, marked on membranes medianly and marginly with brownish so that two rather ill-defined longitudinal bands are formed. Pectoral pale basally, especially lower rays, and distally between each ray on membrane usually a longitudinal dusky streak. Ventral plain. Iris slaty.

Length 7 inches.

Type No. 7,203, W. I. A. P. ♀. Point Barrow, northern Alaska. November 21, 1897. E. A. MacIlhenny. Also another smaller example, paratype, with same data. It is a ♂. It differs a little in the armature of the opercle as the spines are a little shorter. The upper margin of the second dorsal is also not deeply scalloped, like that of male examples of *O. hexacornis*, the free ends of each ray being only a short slender filament. The anterior margins of the first dorsal rays are a little more scabrous. In most every other respect it agrees more or less, the color markings varying a little perhaps. The differences are best appreciated by a comparison of the figures.

Upon comparison with examples of *O. hexacornis* of similar size, the characters indicated by Dr. Scofield for the "*Oncocottus sp. incog.*" which he mentions from Point Barrow are found to disagree.

There is little to separate these two examples from *O. hexacornis*, save perhaps in the more compressed body, slightly notched second dorsal of the male, more narrow interorbital space, and longer or slender caudal peduncle. The coloration of *O. h. gilberti* is perhaps also paler in life as the examples are decidedly so at present, having been in the same preservative. At any rate, I provisionally retain them as distinct.

(Named for Dr. Charles H. Gilbert, of the Chair in Zoölogy in the Leland Stanford Junior University, whose valuable contributions to ichthyology may easily be identified by their thorough excellence and accuracy of detail.)

GADIDÆ.

Boreogadus saida (Lepechin).

Three examples from Point Barrow. Largest 7¼ inches.

Lota maculosa (Le Sueur).

Two examples from the Meade river. October 9, 1897. Larger about 20½ inches. Pectoral not reaching front of dorsal, 1⅘ in head.